

Call: 7th Call - 2018 Network Call on Surveillance

Title: National health care infrastructures, health care utilization and patient movements between hospitals: Networks working to improve surveillance

Acronym: NeWIS

Network composition

Type	Name	Institute	Country
Coordinator	Hajo Grundmann	University of Freiburg	Germany
Partner	Herman Goossens	University of Antwerp	Belgium
Partner	Helena Zemlickova	Charles University - Faculty of Medicine and Faculty Hospital	Czech Republic
Partner	Laura Temime	Conservatoire National des Arts et Métiers	France
Partner	Petra Gastmeier	Charité University Medicine	Germany
Partner	Balázs Babarczy	National Healthcare Service Center	Hungary
Partner	Patrizio Pezotti	Istituto Superiore di Sanità	Italy
Partner	Maria Luisa Moro	Health and Social Agency Emilia	Italy
Partner	Alex Friedrich	University Medical Center Groningen	The Netherlands
Partner	Gunnar Skov Simonsen	University Hospital Tromsø	Norway
Partner	Waleria Hryniewicz	National Medicines Institute	Poland
Partner	Jesús Oteo	Spanish Reference Laboratory for Antibiotic Resistance	Spain
Partner	Christian Giske	Karolinska Institutet	Sweden
Partner	Neil Woodford	Public Health England	UK
Partner	Jacqui Reilly	Lead Consultant at Health Protection Scotland	UK
Partner	Tjibbe Donker	NIHR Global Health Research Unit on Genomic Surveillance of Antimicrobial Resistance Wellcome Genome Campus	UK
Partner	Josephina Campos	Administración Nacional de Laboratorios e Institutos de Salud	Argentina

Abstract

There is a worldwide concern about the emergence, and widespread dissemination, of AMR “high risk” clones that carry the genomic determinants for enhanced virulence and resistance. Regional, national and international surveillance is considered an important component in a strategy to control these strains. However, current surveillance systems are not fit for this purpose and there is still no good evidence base for deciding which and how many sentinel hospitals should be included in surveillance programs. Previous work coordinated by the coordinator has shown that AMR “high-risk” clones spread between health care institutions as a result of patient movements. Hospitals thus become connected by patients. Taken together, all connections create a nexus of institutions that can be described as national health care referral networks. Despite their apparent complexity, these networks reveal a simple scaffolding and remarkably consistent properties that lie at the core of national health care infrastructures. These show many of the typical hallmarks of hierarchically distributed networks, with regionality, centrality, scale-freeness and small world properties. Hence a quantitative understanding of the network dynamics offers the means for purpose-designed surveillance and better targeted interventions. The current proposal will bring together a critical mass of public health microbiologists, health systems researchers, and social network analysts from Europe and beyond. These experts will define the data needs, data sources, algorithms and analysis tools with the aim to identify a heuristic optimisation approach to sentinel site selection. In this way the suggested network activities will provide recommendations for the development of surveillance structures that are more parsimonious, cost- and time effective and provide—through the selection of sampling sites for genomic surveillance by whole genome sequencing (WGS)—the genetic signatures for early, next generation diagnostics of recently emerging clones. The focus on site selection means that WGS will not be part of this initiative.